

My object is to show that there are no insuperable or even formidable difficulties to contend with. Australia would doubtless join us, and thus give the question an Australasian weight.

I know this is an Imperial question, and that it would be almost as easy for the Home Government to make a new coin as to reproduce an old one, which they are continually compelled to do; but if the change is not carried out at Home, that fact should surely not prevent us from adopting it here if found desirable.

ART. IV.—*A List of the Hemiptera (excluding Sternorrhyncha) of the Maorian Subregion, with Notes on a Few of the Species.*

By G. W. KIRKALDY.

[Read before the Philosophical Institute of Canterbury, 5th August, 1908.]

THE list of *Hemiptera* given in the "Index Faunæ Zealandiæ" (1904) is so inadequate as regards the correctness of the nomenclature, and as indicating the probable endemicity or otherwise of the species included, that I have been tempted to prepare a new list, and to add a few notes on one or two of the forms. The total number now enumerated of the *Heteroptera* and auchenorrhynchous *Homoptera*—that is to say, the bugs and leaf-hoppers—is seventy-seven species (this excludes eight recorded in almost positive error). Of these, thirteen may be positively assumed to be non-endemic; of the remaining sixty-four, only about forty may be reasonably assumed to be endemic, but a considerable proportion of these belong to groups scarcely known yet outside the palearctic region.

The forms which may be considered at once pretty safely as endemic are the species of *Rhopalimorpha*, *Oncacantias*, *Acanthia*, *Anisops*, most of *Cicadetta*, and probably some at least of *Oliarus*, *Cixius*, and *Nysius*. The rest are entirely conjectural.

The valuable contributions by Hutton, Hudson, Fereday, and others, in the "Transactions of the New Zealand Institute," dealing with the fauna of the country, lay stress on the almost entire absence of *Hemiptera*, and especially of *Homoptera*; but I am sure that this is entirely a mistake.

The only other Pacific fauna of which the *Hemiptera* are at all well known is that of the Hawaiian Islands. Although endemic *Coccidæ* and *Aphidæ* are absent, I estimate the total number of endemic *Hemiptera* at little less than 360; of these, 138 have already been described, over a hundred more are in manuscript awaiting early publication, and I have at least a hundred more before me. These figures do not include thirty-six introduced *Heteroptera* and *Auchenorrhyncha*, as well as over a hundred coccids, aphids, and aleyrodids, all introduced.

In the Hawaiian fauna the following families are represented endemically: *Lygæidæ*, *Myodochidæ*, *Nabidæ*, *Reduviidæ*, *Anthocoridæ*, *Miridæ*, *Acanthidæ*, *Tetragonidæ*, *Fulgoridæ*, *Asiracidæ*, and *Chermidæ*, and possibly *Cimicidæ*—that is, eleven or twelve out of forty recognised families. In New Zealand all these are present, and we have to add *Thyreocoridæ*, *Aradidæ*, *Enicocephalidæ*, *Gerridæ*, *Notonectidæ*, *Corixidæ*, *Cicadidæ*,

Cercopidæ, *Aleyrodidæ*, and *Coccidæ*, all of which may be (and five certainly are) endemic.

The principal Hawaiian plants, from a hemipterological point of view, are *Nani* (= *Metrosideros polymorpha*, *Pipturus*, *Myrsine*, *Ipomœa*, *Sida*, various tree-ferns, *Myoporum*, and, to a less degree, *Acacia koa*, *Cyathodes*, *Elæocarpus*, *Eugenia*, *Freycinetia*, *Dodonœa*, and *Bobea*. Of these, I find, on reference to Kirk's great work on New Zealand forest-trees (the only such work I have for reference), that *Cyathodes*, *Elæocarpus*, *Eugenia*, *Dodonœa*, *Nani*, *Myoporum*, and *Myrsine*—and, I suppose, *Freycinetia*, *Ipomœa*, and *Sida* also—are well represented in New Zealand. It is almost impossible to believe that they too are not the shelters or food plants of a large hemipterous fauna there.

I have estimated the total endemic Hawaiian fauna at little less than 360. Taking into consideration the hemipterous faunas of the Hawaiian Islands and the British Islands, and the coleopterous and lepidopterous faunas of New Zealand, the British Islands, and the Hawaiian Islands, I have no hesitation in estimating at least 750 species of endemic *Hemiptera* for New Zealand, and I think that this is really much too little.

As it is just possible that some of the members of our Society may feel moved to remedy our deplorable state of knowledge—or, rather, want of knowledge—of the New Zealand *Hemiptera*, I venture to give a few hints as to what may prove to be the best method of securing specimens.

To a considerable extent collecting in New Zealand will be not unlike collecting in the Hawaiian Islands. In the latter, almost all the endemic species are arboreal. They are to be obtained, therefore, by careful beating of the leaves, twigs, and branches, especially the last, but, better still, by searching. The wonderful native grasses, however, must not be neglected, as they are certain to have a large fauna. When collecting leaf-hoppers, searching is often best, but if not, then the branches should be beaten into a large, rather deep net, as the very agile hoppers will jump at once right out of an ordinary umbrella. It is very important to identify the food-plants, and also the nymphal stages, of the various *Hemiptera*, especially of the plant-eating kinds, which are often much restricted in that way. In Hawaii, however, such carnivorous kinds as *Reduviolus* (*Nabidæ*) are also considerably thus restricted. In the forests themselves "sweeping" will be of little avail, this method of capture being reserved principally for grasses. One fruitful method of capturing certain *Miridæ*, *Anthocoridæ*, *Ploiariinæ*, &c., is to beat dead trees which still retain their leaves, though these are withered; such trees will be found near recent forest-clearings.

Of course, these remarks are based on methods of collecting which have been found effective in the Hawaiian Islands, but I believe they will also be found effective in New Zealand. I have only to add that I will be very pleased to help any one who contemplates collecting *Hemiptera* in New Zealand if he will write to me at Honolulu.

Suborder HETEROPTERA.

Fam. CIMICIDÆ (= *Scutelleridæ*, *Aspidæ*, *Sciocoridæ*, *Pentatomidæ*, *Halysidæ*, and *Acanthosomatidæ* of Hutton's list).

Æchalia, Stal.

1. *consocialis* (Boisduval) = *O. schellebergii*, Hutton.

This has been figured by Schouteden, 1907, Gen. Ins., fasc. 52, pl. v, f. 12. It is scarcely endemic in New Zealand, being common almost all

over Australia and Tasmania. The record from the Philippines is almost certainly a mistake. In Australia, *Echalia* is (at least partly) carnivorous, preying on the larvæ of *Phalænides glycine* (the vine-moth), and of *Galeruca semipullata* (the figleaf-beetle).

Cermatulus, Stål.

2. *nasalis* (Westwood).

This also is scarcely endemic, as it is also found in Australia and Tasmania. Schouteden figures it: pl. v, f. 6. Hudson, who figures the nymph (Man. N.Z. Ent., pl. xx, f. 6A), notes it from "white rata" (*Metrosideros scandens*). I seem to have another species in my collection, but none of the material is in good enough condition for description. I have recorded *C. nasalis* from French Pass and Stephen Island.

Glaucias, Kirkaldy.

3. *amyoti* (White) = *Nezara amoyti* (!), Hutton.

This also is an Australian species, and not endemic. I have recorded it from French Pass.

Nezara, Am. and Serv.

4. *viridula* (Linn.) = *prasina*, Hutton.

Not endemic, but a practically cosmopolitan species, figured in Wolff's Icon. Cim. 56, f. 53 (as *smaragdula*).

Diemenia, Spinola (= *Platycoris*, Hutton).

5. *immarginata* (Dallas).

Another Australian form.

[**Sciocoris**, Fallén.

helferi, Fieber. A southern European species, recorded almost certainly in error from New Zealand.]

Dictyotus, Dallas.

6. *cænosus* (Westwood) = *polysticticus*, Hutton.

Distributed over Australia and Tasmania. I have recorded it from French Pass.

Rhopalimorpha, Mayr.

7. *obscura*, Dallas.

This species seems to be autochthonous. I have recorded it from French Pass and Chatham Island.

8. *ignota*, Hutton, 1898.

From the Chatham Islands.

Oncaontias, Breddin (= *Anubis*, Hutton).

9. *vittatus* (Fabricius).

Apparently also autochthonous.

[**Calliphara**, Germar.

imperialis (Fabricius). An Australian species, whose presence in New Zealand requires confirmation; certainly not endemic. It is figured in Donovan's Ins. New Holland, pl. iii, f. 2.]

[*Scutiphora*, Guérin.

pedicellata, W. Kirby. The presence of this species in New Zealand also requires confirmation. It occurs in Papua, Australia, and Tasmania, and is somewhat of a pest at times on fruits in Australia.]

Fam. THYREOCORIDÆ (= *Cydnidæ*, Hutton).

Hahnia, Ellenrieder (= *Geotomus*, Hutton).

10. *australis*, Erichson = *leptospermi*, Hutton.

Distributed over Australia, Tasmania, New Caledonia, and Ceylon. F. B. White states that this was once found "in numbers on the seabeach at Sumner, either floating in salt-water pools or crawling on the sand" (Ent. Mo. Mag. xiv, 275).

Chærocydnus, A. White (= *Chæno*, Hutton).

11. *nigrisignata*, F. B. White.

Not known elsewhere.

Pangæus, Stål.

12. *scotti*, Signoret. Figured 1882, A. S. E. France (6), ii, pl. ix, f. 117.

Not known elsewhere.

Fam. ARADIDÆ.

Aradus, Fabricius.

13. *australis*, Erichson.

Also from Australia, Tasmania, and New Caledonia. I have recorded it from Chatham Islands.

Ctenoneurus, Bergroth.

14. *hochstetteri* (Mayr) = *Crimia attenuata* and *Mezira maorica*, Hutton, syn. *Aneuris*, Curtis.

15. *brouni*, F. B. White.

Fam. MYODOCHIDÆ (= *Lygæidæ*, Hutton).

Arocatus, Spinola.

16. *rusticus*, Stål. = *ruficollis*, Hutton.

A common Australian species. I have recorded it from French Pass.

Stalagmostethus, Stål. (= *Lygæus*, Hutton, syn.).

pacificus (Boisduval). Distributed over Australia, Tasmania, and New Caledonia. The record from New Zealand is doubtful.]

Nysius, Dallas.

17. *huttoni*, F. B. White.

I have recorded it also from Chatham Islands.

18. *clavicornis* (Fabricius) = *zealandicus*, Hutton.

19. ? *anceps*, F. B. White.

Metagerra, F. B. White (= *Paresuris*, Reuter).

20. *helmsi* (Reuter).

21. *obscura*, F. B. White.

Orthœa, Dallas (= *Plociomerus*, Hutton).

22. *nigriceps*, Mayr = *inornatus*, Hutton.

Also recorded from the Hawaiian Islands, Tahiti, and the Philippines. The synonymy of this species is perhaps a little doubtful. I have recorded the var. *inornata* (Walker) from Chatham Islands.

Targarema, F. B. White.

23. *electa*, F. B. White.

24. *stali*, F. B. White.

Margareta, F. B. White.

25. *dominica*, F. B. White.

Scolopostethus, Fieber.

26. *putoni*, F. B. White.

Fam. NABIDÆ.

Reduviolus, W. Kirby (= *Nabis*, Hutton).

27. *saunderi* (F. B. White).

28. *maoricus* (Walker).

[*lineatus*, Dahlbom (not Dahlberg!), is a European species, and ^{from} _{the} was almost certainly recorded in error.]

Fam. GERRIDÆ.

Microvelia, Westwood (= *Hydroessa*, Hutton).

29. *macgregori*, Kirkaldy.

Fam. REDUVIIDÆ (incl. *Emegidæ*).

Peirates, Am. and Serv. (= *Pirates*, Hutton).

30. *ephippiger* (A. White).

An Australian species.

Ploiaria, Scopoli (= *Emesodema*, Hutton).

31. *huttoni* (Scott).

Fam. ENICOCEPHALIDÆ.

Enicocephalus, Westwood (= *Henicocephalus*, Hutton).

32. *maclachlani* (Kirkaldy).

Probably not endemic, but Australian, though not known elsewhere than in New Zealand.

[Fam. MACROCEPHALIDÆ (= *Phymatidæ*, Hutton).

Phymata inconspicua and *feredayi* were recorded in error, or else were introduced from America.]

Fam. ANTHOCORIDÆ.

Cardiastethus, Fieber.

33. *brownianus*, F. B. White.

34. *consors*, F. B. White.

35. *poweri*, F. B. White.

Fam. CLINOCORIDÆ.

Clinocoris, Fallén (= *Cimex*, Hutton).

36. *lectularius* (Linneus).

Cosmopolitan.

Fam. MIRIDÆ (= *Capsidæ*, Hutton).

Megaloceræa, Fieber.

37. *reuteriana*, F. B. White.

Romna, Kirkaldy (= *Morna*, F. B. White).

38. *capsoides* (F. B. White).

39. *scotti* (F. B. White).

Reuda, F. B. White.

40. *mayri*, F. B. White.

The next three species are of uncertain generic position.

41. *Leptomerocoris maoricus*, Walker.

42. *Capsus laticinctus*.

42A. *C. ustulatus*, Walker.

This appears from the description to be the same as No. 42.

Fam. ACANTHIIDÆ (= *Saldidæ*, Hutton).

Acanthia, Fabricius (= *Salda*, Hutton).

43. *australis* (F. B. White).

44. *butleri* (F. B. White) = *bulteri*! Hutton.

45. *lælaps* (F. B. White).

Fam. CORIXIDÆ.

Arctocoris, Wallengren (= *Corixa*, Hutton).

46. *arguta* (F. B. White).

[*Diaprepocoris barycephala*, Kirkaldy, is an Australian form, and has not been taken in New Zealand.]

Fam. NOTONECTIDÆ.

Anisops, Spinola.

47. *wakefieldi*, F. B. White.

I have recorded this from Chatham Islands also.

48. *assimilis*, F. B. White.

Fam. CICADIDÆ.

Cicadetta, Kolenati (= *Melampsalta*, Hutton).

49. *cassiope* (Hudson) = ? *nervosa* (Walker).

50. *mangu* (F. B. White).

51. *iolanthe* (Hudson).

52. *scutellaris* (Walker).

53. ? *arche* (Walker).

A doubtful species, placed by Stål as a synonym of *telxiope*, but probably in error.

54. *muta* (Fabricius) (var. *subalpina*, Hudson).

Also on Chatham Islands.

55. *aprilina* (Hudson).

C. cutora (Walker) and *ochrina* (Walker) may belong to this, but were placed by Stål as synonyms of *muta*.

56. *cruentata* (Fabricius).

C. rosea (Walker), *bilinea* (Walker), *sericea* (Walker), and *muta* vars. *rufescens* and *flavescens*, probably belong to this. Hutton and I have recorded it from Chatham Islands.

57. *cincta* (Walker).

This is probably *muta* var. *minor*, Hudson.

58. *cingulata* (Fabricius).

This is probably *zealandica* (Boisduval) and *indivulsa* (Walker).

59. *strepitans*, nom. nov.!

This is *Cicada cingulata* var. *obscura*, Hudson, which is a good species. I have renamed it, as I have not been able to identify it with any of Walker's species.

60. *angusta* (Walker).

This is probably *muta* var. *cinerascens*, Hudson.

The New Zealand species of *Cicadetta* much need revision, but it will be necessary for Walker's types to be examined. Stål made a hurried revision of them in 1862, and later notes were made by Kirby and Distant, but their conclusions are not to be relied on, as they did not study the ♂ genitalia, the most important specific characteristic in this genus. There are doubtless still many more species to be obtained in New Zealand.

My remarks cited by Alfken (1904 Zool. Jahrb. Syst., xix, 582) were written in 1899, and are to be disregarded entirely, as I had not then studied the genitalia.

FAM. CERCOPIDÆ.

Cercopis, Fabricius (= *Aphrophora*, Hutton).

61. *jactator* (F. B. White).

Philænus, Stål (= *Philænus*, Hutton).

62. *pingens* (Walker).

63. *subvirescens* (Butler).

64. *trimaculatus* (Walker).

The type-form with two vars. (*tristis*, Alfken, and *læta*, Alfken) have been recorded from Chatham Islands.

FAM. TETIGONIDÆ (= *Jassidæ*, Hutton).

Paradorydium, Kirkaldy (= *Dorydium*, Hutton).

65. *westwoodi* (F. B. White).

The genus of the following specimens is doubtful. I have not seen a specimen.

66. *negatus*; F. B. White.

FAM. FULGORIDÆ.

Cixius, Latreille.

67. *interior*, Walker.

68. *punctimargo*, Walker.

69. ? *aspilus*, Walker.

70. *rufifrons*, Walker.

Oliarus, Stål.

71. *oppositus* (Walker).
 72. *marginalis* (Walker).

Fam. PEKILLOPTERIDÆ.

Scolypopa, Stål (= *Ricania*, Hutton).

73. *australis* (Walker).

An Australian species, feeding on passion-vines, &c. The nymph is green, with white filaments.

Aka, F. B. White.

74. *finitima* (Walker).

Semo, F. B. White.

75. *clypeatus*, F. B. White.

Agandecca, F. B. White.

76. *annectens*, F. B. White.

Fam. ASIRACIDÆ (= *Delphacinae*, Hutton).Micromasoria, Kirkaldy (= *Cona*, Hutton).

77. *cælata* (F. B. White).

P.S.—Recently I have received from Mr. A. Hamilton, Director of the Dominion Museum, Wellington, a small box of *Hemiptera*, containing, with other species, a specimen of *Dindymus versicolor*, an addition to the Maorian fauna. It is distributed over Australia and Tasmania, and is therefore not likely to be endemic, but has probably been introduced with fruit or fruit-trees. It belongs to the family *Pyrrhocoridae* (not previously known from New Zealand), which may be recognised by the antennæ being inserted low down on the head, by the absence of ocelli, by the numerous veins on the membrane, &c.

In *Dindymus versicolor*, H.-S., the head, antennæ (mostly), legs, anterior area of pronotum, scutellum, apical margin of tegmina broadly, pygophor beneath, black; rest of pronotum and of tegmina brownish-red; sterna and pleura mostly red; abdomen beneath pale-yellow. Length, about 12 mm.

In the collection was also a specimen of *Nysius anceps*, White, which belong to the subgenus *Nithecus*, Horváth, if this is indeed a natural one. The species may, as White suggests, have a macropterous form.